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West Virginia No. 6

Forest Statistics for the Western Section of West Virginia

Northeastern Forest Experiment Station

Upper Darby, Pennsylvania
Ralph W. Marquis, Director

1953

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United States Department of Agriculture • • • Forest Service

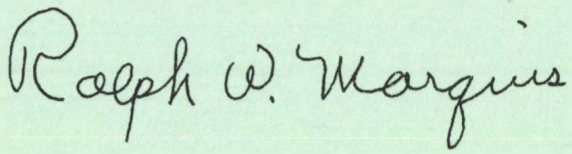
FOREWORD

This is the sixth in a new series of preliminary reports about forest areas and timber volume in the State of West Virginia. It is a product of the forest survey of the Northeast, carried on by the Northeastern Forest Experiment Station as part of the Nation-wide forest survey being made by the Forest Service, U. S. Department of Agriculture.

Similar reports will be issued for the other two sections of the State.

The Forest Survey in West Virginia was carried out in collaboration with the West Virginia Conservation Commission. This agency provided the aerial photographs that were used and assigned personnel in a joint forest and game-habitat survey.

Field work in this section of West Virginia was supervised by Harry W. Camp, Jr. C. Allen Bickford developed the statistical procedures used in the survey. Computations were made under the supervision of Roland H. Ferguson.



Ralph W. Marquis
Director

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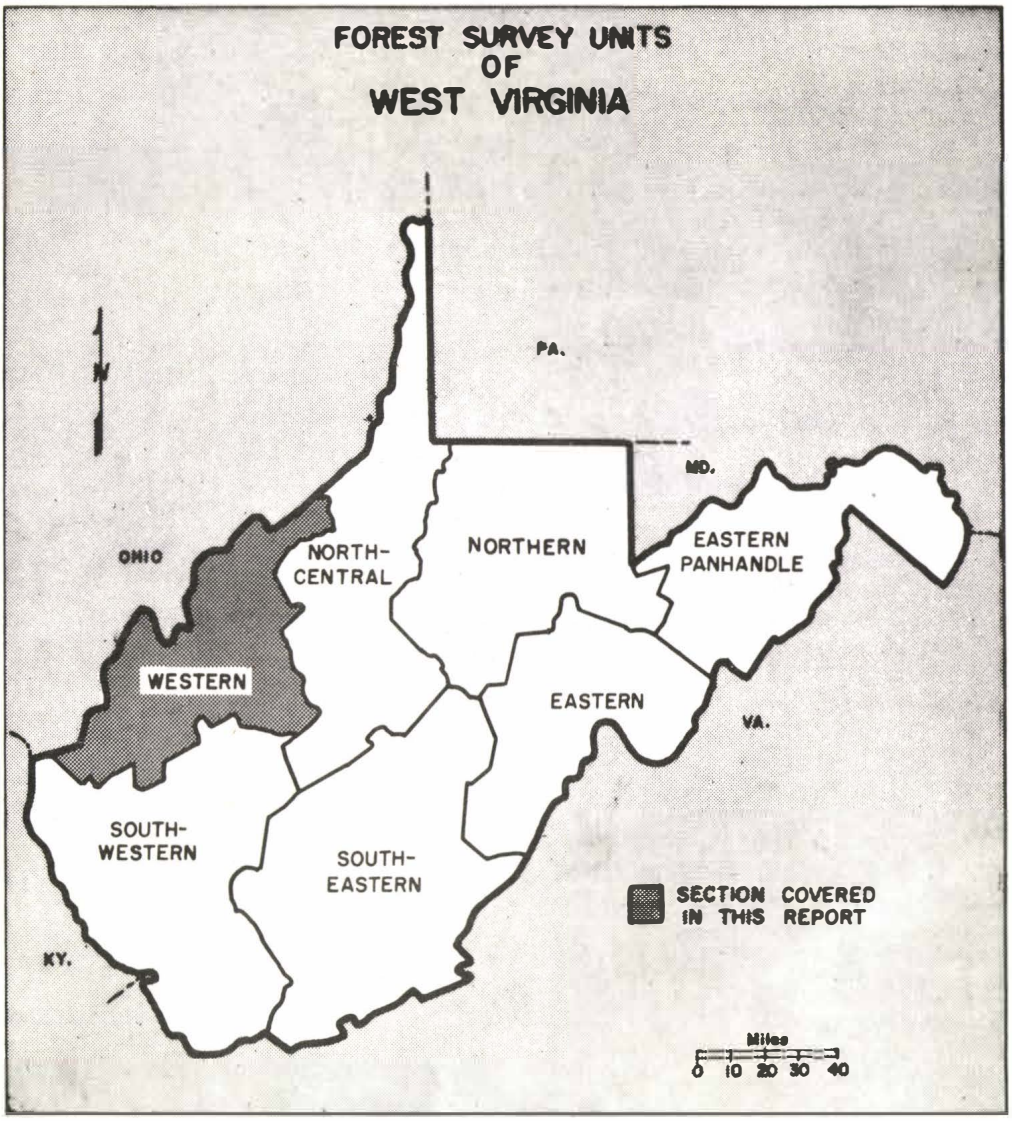
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FOREST STATISTICS

FOR THE

WESTERN SECTION

OF WEST VIRGINIA

by

Robert D. Wray *forest economist*

Northeastern Forest Experiment Station
Forest Service, U.S. Dept. Agriculture

GENERAL

The Western Section of West Virginia lies adjacent to the Ohio River. It includes eight counties: Cabell, Jackson, Mason, Pleasants, Putnam, Roane, Wirt, and Wood.

The topography in this area is rolling to hilly, with broad flood plains along the larger streams. Farming is more extensive in this general area than in any other part of the State.

The Forest Area

The eight counties have a total land area of more than 1-3/4 million acres. Of all the sections of the State, this section has the smallest proportion of its land in forest; less than 44 percent of the total land area is forested.

This section contains 767,800 acres of forest land. There is no reserved or noncommercial forest land here; all the forests are available for commercial logging.

Ownership

Fifty-eight percent of the forest land is held by farmers. Other private owners hold 41 percent. There are a few privately owned tracts of more than 5,000 acres in Putnam County.

Only 1 percent of the forest area is in public ownership. Most of this is administered by the U. S. Soil Conservation Service.

The Forest Types

The red oak type occupies nearly half the forest land. White oak makes up 9 percent. Two other important hardwood types, yellow-poplar and sugar maple-beech-yellow birch, make up 20 percent. The remaining 23 percent of forest land carries softwood types--hard pine and hand pine-oak.

Condition Of The Forests

Saw-timber stands of more than 5,000 board feet per acre cover only 4 percent of the forest area. These heavier stands contain 12 percent of the saw-timber volume.

Saw-timber stands of 1,500 to 5,000 board feet per acre occupy nearly one-third of the forest area and contain 62 percent of the saw-timber volume. The remaining forest land bears only one-fourth of the saw timber.

Of the total forest area in this section, 30 percent bears stands made up chiefly of trees less than 5 inches in diameter.

Timber Volume

The Western Section contains slightly more than 1 billion board feet of saw timber. Two-thirds of this volume is red, white, and chestnut oak. More than 10 percent is hard pine--pitch, Virginia, and shortleaf. The rest of the saw-timber volume is made up of various other hardwoods.

(Although all of the volume reported above meets the requirements for saw timber, some of it may not be operable from a strictly business viewpoint. Operability depends upon species, quality, volume per acre, accessibility, markets, and so on. These are the things that help determine whether one can cut timber and make money. However, it is

not within the scope of this statistical report to distinguish between operable and inoperable timber stands. The purpose here is merely to report the total amount of timber that exists in this part of West Virginia. These statistics will be analyzed later in a comprehensive report for the entire State.)

The growing stock amounts to a little more than 400 million cubic feet. Fifty-five percent of this volume is in saw-timber trees; the rest is in pole-timber trees.

The total cubic volume is the equivalent of about 5 million cords. More than 80 percent of it is in trees less than 15 inches in diameter.

WESTERN SECTION OF WEST VIRGINIA

Table 1.--Land area and commercial forest area by county[1], 1949

County	Land	Commercial forest	
	Acres	Acres	Percent
Cabell	178,600	71,100	40
Jackson	296,300	107,400	36
Mason	276,500	130,400	47
Pleasants	83,200	48,100	58
Putnam	223,400	124,000	56
Roane	311,000	130,300	42
Wirt	149,800	76,800	51
Wood	235,500	79,700	34
Total	1,754,300	767,800	44

[1]There is no reserved forest land or noncommercial forest land in this section.

WESTERN SECTION OF WEST VIRGINIA

Table 2.--Commercial forest area by ownership, 1949

Ownership	Area	
	Acres	Percent
Private:		
Farm forest land[1]	442,400	58
Other private	318,300	41
Total private	760,700	99
Public:		
Federal[2]	6,500	1
State and county	600	(3/)
Total public	7,100	1
All ownerships	767,800	100

[1]Census of Agriculture, 1950.

[2]Soil Conservation Service-(land-utilization project.)

[3]Less than 0.5 percent.

WESTERN SECTION OF WEST VIRGINIA

Table 3.--Commercial forest area by forest type, 1949

Forest type	Area	
	Acres	Percent
Red oak	369,300	48
White oak	69,300	9
Yellow-poplar	127,200	16
Sugar maple-beech-yellow birch	28,300	4
Hard pine-oak	151,100	20
Hard pine types	22,600	3
All types	767,800	100

WESTERN SECTION OF WEST VIRGINIA

Table 4.--Commercial forest area by stand-size class, 1949

Stand-size class	Area	
	Acres	Percent
Saw-timber stands:		
More than 5,000 bd.ft. per acre	26,900	4
1,500-5,000 bd.ft. per acre	249,600	32
Pole-timber stands:		
More than 600 cu.ft. per acre	119,600	16
200-600 cu.ft. per acre	140,100	18
Other stands	231,600	30
All stands	767,800	100

WESTERN SECTION OF WEST VIRGINIA

Table 5.--Net volume of live timber on commercial forest land by species, 1949

Species	Growing stock		Saw timber[1]
	Thousand cu.ft.	Equivalent in cords[2]	Thousand bd.ft.
Red oak	128,700	1,608,800	482,400
White oak	83,800	1,047,500	203,600
Chestnut oak	31,800	397,500	62,200
Yellow-poplar	21,400	267,500	30,200
Hickory	28,600	357,500	27,800
Sugar maple	7,600	95,000	24,900
Beech	4,900	61,200	20,400
Ash	8,400	105,000	14,300
Elm	4,800	60,000	12,900
Basswood	4,000	50,000	11,400
Gum	5,500	68,800	11,300
Other hardwood	25,300	316,200	45,500
All hardwood	354,800	4,435,000	946,900
Hard pine	45,600	570,000	119,200
Other softwood	1,800	22,500	4,900
All softwood	47,400	592,500	124,100
All species[3]	402,200	5,027,500	1,071,000

[1]International $\frac{1}{4}$-inch log rule.

[2]Rough standard cords. 1 cord = 80 cubic feet.

[3]In addition there are 47 million cubic feet (net volume) in live cull trees.

WESTERN SECTION OF WEST VIRGINIA

Table 6.--Net volume of live timber on commercial forest land by diameter class, 1949

Diameter class[1] (inches at breast height)	Growing stock	Saw timber
	Thousand cu.ft.	Thousand bd.ft.
Hardwood:		
6	44,800	--
8	51,300	--
10	70,300	--
12	61,300	259,300
14	52,300	258,500
16	27,700	148,200
18	23,400	130,600
20	9,100	55,300
22	2,800	17,700
24 and larger	11,800	77,300
All hardwood	354,800	946,900
Softwood:		
6	8,000	--
8	8,300	--
10	13,100	46,400
12	9,400	38,900
14	5,600	25,100
16 and larger	3,000	13,700
All softwood	47,400	124,100
Softwood and hardwood	402,200	1,071,000

[1]The midpoint of each 2-inch diameter class is indicated.

WESTERN SECTION OF WEST VIRGINIA

Table 7.--Average net volume per acre of live timber on commercial forest land by stand-size class, 1949

Stand-size class	Growing stock	Saw timber
	Cubic feet	Board feet
Saw-timber stands	920	2,860
Pole-timber stands	450	830
Other stands	130	280
All stands	520	1,400

APPENDIX

DEFINITIONS OF TERMS

Forest Area

Forest land area.--Includes (a) lands that are at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting influence on the climate or on the water regime; (b) land from which the trees described in (a) have been removed to less than 10 percent stocking and which has not been developed for other use; and (c) afforested areas. (Forest tracts of less than 1 acre and isolated strips of timber less than 120 feet wide are excluded.)

Commercial forest land area.--Forest land that is (a) producing, or physically capable of producing, usable crops of wood (usually saw timber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Forest Types

Forest types are defined according to the species, or species group, that make up the major portion of the stand in terms of board feet in saw-timber stands or number of stems in other stands. The type names are self-explanatory.

Stand-Size Classes

Saw-timber stands.--Stands with saw-timber trees having a minimum net volume per acre of 1,500 board feet, International $\frac{1}{4}$-inch rule.

Pole-timber stands.--Stands failing to meet the saw timber stand specification, but at least 10 percent stocked with pole-timber and larger trees (5.0 inches d.b.h. and larger), and with at least half of the minimum stocking in pole-timber trees. (Pole-timber stands carry at least 200 cubic feet per acre.)

Other stands.--Forest stands that do not qualify as saw timber or pole timber; stands of seedlings and saplings; nonstocked areas.

Tree Classes

Saw-timber trees.--Trees of commercial species that contain at least one merchantable sawlog as defined by re-

gional practice and which are of the following minimum diameters at breast height (d.b.h.): Softwoods 9.0 inches and hardwoods 11.0 inches. (All butt sawlogs are considered merchantable. Where the butt is defective, upper sawlogs are considered merchantable if they account--in terms of aggregate volume--for 50 percent or more of the gross volume below the top of the uppermost sawlog. Softwood sawlogs are at least 6 inches in diameter, inside bark at small end; 8 to 16 feet in length; sound and straight enough to be manufactured into standard lumber. The smaller logs are generally free of surface defects other than small tight knots. Hardwood sawlogs are at least 8 inches in diameter, inside bark at small end; 8 to 16 feet in length; suitable for sawing into standard lumber, construction timber, or ties.)

Pole-timber trees.--Trees 5.0 inches d.b.h. and larger of commercial species that do not meet the specifications for saw-timber trees but do meet regional specifications of species, soundness, and freedom from defect. (These are the trees that are straight and clear enough to make saw-timber trees eventually.)

Seedling and sapling trees.--Trees of commercial species less than 5 inches d.b.h.

Cull trees.--Live trees of saw-timber or pole-timber size that are unmerchantable for sawlogs now or prospectively because of defect, rot, or species.

Timber Volume

Growing stock.--Net volume, in cubic feet, of live saw-timber trees and live pole-timber trees from stump to a minimum 4.0-inch top (of central stem) inside bark.

(This volume is also given in rough, standard cords, bark included. Cord volume is derived from cubic-foot volume by applying a factor of 80 cubic feet per cord.)

Saw-timber volume.--Net volume in board feet, International $\frac{1}{4}$-inch rule, of live saw-timber trees.

FOREST SURVEY METHODS

These forest statistics for the Western Section are based on information gathered from sample plots. These plots are distributed randomly over the entire area.

They were first located on aerial photographs. Trained photo interpreters then examined the photos and classified each forest plot according to stand size. Field crews inspected enough plots on the ground to attain a spec-

ified level of statistical accuracy. Species and volume data were collected on these ground plots.

The survey was designed for maximum accuracy in the estimate of total merchantable cubic volume.

ACCURACY OF THE ESTIMATES

The estimates in this report may contain two kinds of error.

First, photo interpreters may make mistakes of judgment and fieldmen may make mistakes in measuring or recording. There is no practical way of finding out just how often such errors occur. But they are kept to a minimum by closely checking all phases of the work.

The second kind of error is associated with sampling procedures. The size of this error can be measured. In the Western Section the chances are 2 to 1 that the error will not exceed 4.6 percent of the total forest area, 10.3 percent of the total board-foot volume, or 7.3 percent of the total cubic-foot volume.

These percentages show that the area estimates are more reliable than the volume estimates, and that our cubic-foot estimates are more reliable than the board-foot estimates.

In each of the tables, the total figures are more reliable than the subtotals. The subtotals are more reliable than any of the individual figures. Figures that are small in relation to totals are subject to larger sampling errors.

SPECIES TALLIED

The various commercial tree species tallied in the Western Section of West Virginia are listed below.[1] Approved common names are shown in parentheses if these differ from the brief name used in the tables.

Hardwoods

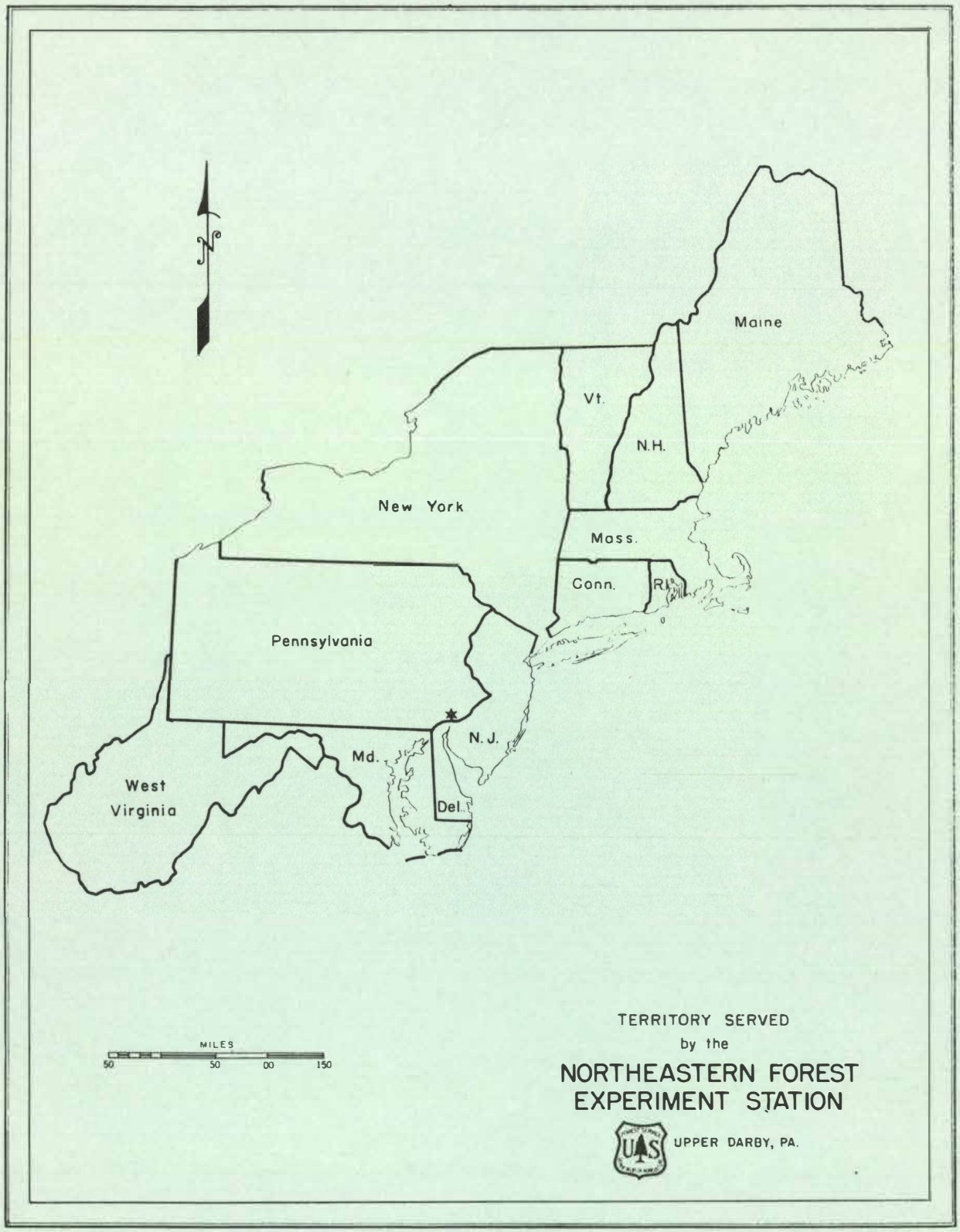
Red oak (Northern red oak)	- Quercus borealis
(Black oak)	- Quercus velutina
(Scarlet oak)	- Quercus coccinea
(Pin oak)	- Quercus palustris
White oak	- Quercus alba

[1] U.S. FOREST SERVICE. CHECK LIST OF THE NATIVE AND NATURALIZED TREES OF THE UNITED STATES INCLUDING ALASKA. 325 PP. WASHINGTON. 1949.

Chestnut oak	- Quercus montana
Yellow-poplar	- Liriodendron tulipifera
Hickory	- Carya species
Sugar maple	- Acer saccharophorum
Beech (American beech)	- Fagus grandifolia
Ash	- Fraxinus species
Elm	- Ulmus species
Basswood (American basswood)	- Tilia americana
Gum (Blackgum)	- Nyssa sylvatica
Other hardwoods	
(Black cherry)	- Prunus serotina
(Bigtooth aspen)	- Populus grandidentata
(Black walnut)	- Juglans nigra
(Butternut)	- Juglans cinerea
(Silver maple)	- Acer saccharinum
(River birch)	- Betula nigra
(American sycamore)	- Platanus occidentalis
(Black willow)	- Salix nigra
(Buckeye)	- Aesculus species
(Cucumbertree)	- Magnolia acuminata

Softwoods

Hard pine (Pitch pine)	- Pinus rigida
(Virginia pine)	- Pinus virginiana
(Shortleaf pine)	- Pinus echinata
Other softwoods	
(Eastern hemlock)	- Tsuga canadensis
(Eastern white pine)	- Pinus strobus
(Eastern redcedar)	- Juniperus virginiana



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